

WHAT IS CLAIMED IS:

1. A rigidized ceramic batting board comprising:
a plurality of ceramic fibers; and,
5 a binder disposed on the fibers and interlocking the fibers with one another,
wherein the binder exhibits reverse thermal gelation properties in aqueous
solution.
2. The ceramic batting board of Claim 1, wherein the binder is a cellulose
10 derivative having reverse thermal gelation characteristics in aqueous solution.
3. The ceramic batting board of Claim 1, wherein the binder is selected
from the group consisting of methylcellulose and methylcellulose derivatives.
- 15 4. The ceramic batting board of Claim 3, wherein the binder is selected
from the group consisting of methylcellulose, hydroxypropyl-methylcellulose,
hydroxybutyl-methylcellulose, and combinations thereof.
5. The ceramic batting board of Claim 1, wherein the plurality of ceramic
20 fibers are selected from the group consisting of alumina, silica, aluminosilicate,
aluminoborosilicate, and combinations thereof.
6. The ceramic batting board of Claim 5, wherein the ceramic fibers are
continuous.
- 25 7. The ceramic batting board of Claim 5, wherein the ceramic fibers are
chopped.
8. The ceramic batting board of Claim 1, wherein the batting board has a
30 uniform density throughout the thickness of the board.
9. The ceramic batting board of Claim 8, wherein the batting board has a
density of between about 5 lbs/ft³ and about 24 lbs/ft³.

10. The ceramic batting board of Claim 3, wherein the board is about 5 wt% to about 20 wt% binder.

11. A method of forming a rigid ceramic fiber batting material, comprising
5 the steps of:

applying an aqueous solution of a binder to at least one layer of a pre-formed ceramic fiber batting;

gelling at least a portion of the binder within the batting by warming the binder solution; and,

10 evaporating the water from the batting layer at a temperature above the gelation temperature of the binder.

12. The method of forming rigid batting material of Claim 11, wherein the binder is a cellulose derivative having reverse thermal gelation characteristics in
15 aqueous solution.

13. The method of forming rigid batting material of Claim 12, wherein the binder is selected from the group consisting of methylcellulose and methylcellulose derivatives.
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14. The method of forming rigid batting material of Claim 13, wherein the binder is selected from the group consisting of methylcellulose, hydroxypropyl-methylcellulose, hydroxybutyl-methylcellulose, and combinations thereof.

25 15. The method of forming rigid batting material of Claim 11, further comprising the step of compressing the batting after gelation of the binder, and maintaining the compression while evaporating water from the batting layer.

16. The method of forming rigid batting material of Claim 11, wherein the
30 step of applying an aqueous solution of the binder comprises saturating the batting layer with the aqueous solution.

17. The method of forming rigid batting material of Claim 11, wherein the aqueous solution is from 0.1 wt% to about 5.0 wt% binder.

18. The method of forming rigid batting material of Claim 11, further comprising the step of incorporating the rigid batting material into a blanket.

5 19. The method of forming rigid batting material of Claim 11, wherein the pre-formed ceramic fiber batting is chopped fiber that has been vacuum formed upon a screen.

10 20. A method of forming a rigid ceramic batting, comprising the steps of:
forming a slurry of water, ceramic fibers, and a binder dissolved within the water;
vacuum forming the slurry into a green batting layer; and,
heating the green batting layer to a temperature above the gelling temperature of the binder solution.

15 21. The method of forming a rigid ceramic batting of Claim 20, wherein the binder is a cellulose derivative having reverse thermal gelation characteristics in aqueous solution.

20 22. The method of forming a rigid ceramic batting of Claim 21, wherein the binder is selected from the group consisting of methylcellulose and methylcellulose derivatives.

25 23. The method of forming a rigid ceramic batting of Claim 22, wherein the binder is selected from the group consisting of methylcellulose, hydroxypropyl-methylcellulose, hydroxybutyl-methylcellulose, and combinations thereof.

24. The method of forming a rigid ceramic batting of Claim 20, wherein the aqueous solution is from 0.1 wt% to about 5.0 wt% binder.

30 25. The method of forming a rigid ceramic batting of Claim 20, further comprising the step of incorporating the rigid ceramic batting into a blanket.